

A METHOD AND SYSTEM FOR COMPLETING FORMS
ON WIDE AREA NETWORKS SUCH AS THE INTERNET

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. provisional patent application Serial Number 60/252,644, filed on 22 November 2000, which is hereby incorporated by reference into this specification.

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0002] The present invention relates generally to methods for automatically complying with requests for information received from a wide area network, such as the Internet. More specifically, the invention relates to a method and system for completing the blanks in a form document received from Internet web sites for purposes such as the submission of personal and billing information in conjunction with a purchase or registration made over the Internet.

BRIEF DESCRIPTION OF THE PRIOR ART

[0003] The Internet is now well established as a marketplace where people may shop and make purchases using credit cards and other types of identification information. While most of today's users of the Internet believe it is a recent communications phenomenon, the origins of the Internet actually go back several decades. Today's Internet grew out of a computer resource-sharing network created in the 1960s by the Advanced Research Projects Agency (ARPA). This computer resource-sharing network, which came to be known as the ARPAnet, was primarily designed by ARPA's chief scientist, Larry Roberts. The initial problem facing a wide-area computer resource-sharing network was how to efficiently transmit digitized information in a reliable way. To solve this problem, in 1968, Roberts mandated use of a packet-switching design in the ARPAnet.

[0004] Packet switching breaks up blocks of digitized information into smaller pieces called packets. These packets are transmitted through the network, usually by different routes, and are then reassembled at their destination. Eight years prior to ARPA's design, Len Kleinrock invented packet switching. See, e.g., Len Kleinrock, "Information Flow in Large Communications Nets," RLE Quarterly Progress Report (1960); Len Kleinrock, Communication Nets (1964). See also Paul Baren, "On Distributed Communications Networks," IEEE Transactions on Systems (March 1964). Roberts believed that packet switching was the means to efficiently transmit digitized information in a reliable way.

00975563-101601
109701-252644

[0005] The next problem to solve was how to interconnect a number of mainframe computers, most of which utilized different languages and different operating systems. Wesley Clark of Washington University in St. Louis, Missouri, devised the solution to this huge incompatibility problem. Clark proposed that a smaller minicomputer should interface between every mainframe and the network. All of these minicomputers would run on the same operating system and use the same language. Each mainframe, therefore, would only be required to interface with its own minicomputer, with the minicomputer translating into the network operating system and language. These Interface Message Processors (IMP), which provided an interface between the ARPAnet host mainframe computers and the ARPAnet, were the predecessors to today's routers. With this basic design, the first two nodes on the ARPAnet communicated on 1 October 1969.

[0006] By 1971, fifteen nodes, mostly academic institutions, were up on the ARPAnet. However, the original goal of the ARPAnet was not being realized. Resource sharing of the mainframe computers was simply too cumbersome. In March 1972, however, Ray Tomlinson of Bolt, Beranek & Newman invented e-mail. Use of this message transfer program quickly grew to be the initial major use of the ARPAnet.

[0007] By the mid-seventies, the ARPAnet was not the only network utilizing switching packets. Once again, an incompatibility problem emerged. Each of these different networks used a different protocol. Thus, interconnection of these different networks was not possible. The solution, devised by Robert Kahn of ARPA and Vincent Cerf of Stanford University, was called the Transmission Control Protocol/Internet Protocol (TCP/IP). The Transmission Control Protocol (TCP) packetized information and reassembled the information upon arrival. The Internet Protocol (IP) routed packets by encasing the packets between networks. See, e.g., Robert Kahn and Vincent Cerf, "A Protocol for Packet Network Intercommunication," IEEE Transactions on Communications Technology (May 1974). Transmission Control Protocol/Internet Protocol was adopted by the ARPAnet in 1983. With the addition of the Domain Name System (DNS) in November 1983, the now familiar Internet address protocol was established.

[0008] A final step in creating the Internet occurred in 1990, when an Englishman, Tim Berners-Lee of the European Center for Particle Research (CERN) in Switzerland, invented the World Wide Web. This paradigm, based on a program Berners-Lee had written in 1980 to allow users to store information using random associations, allowed material from any computer, from any format to be translated into a common language of words, images and addresses. Berners-Lee's program established the three core components of the World

Wide Web: the Universal Resource Locator (URL), HyperText Markup language (HTML), and Hyper Text Transfer Protocol (HTTP).

[0009] Uniform Resource Locators (URLs) are used to identify specific web sites and web pages on the Internet. URLs also identify the address of the document to be retrieved from a network server. HyperText Markup Language (HTML) is a commonly used scripting or programming language that permits content providers or developers to place hyperlinks within web pages. These hyperlinks link related content or data, which may be found on multiple Internet host computers. HTML document links may retrieve remote data by use of Hypertext Transfer Protocol (HTTP). Alternatively, File Transfer Protocol (FTP), Gopher, or other Internet application protocols can be used. When a user clicks on a link in a web document, the link icon in the document contains the URL that the client employs to initiate the session with the server storing the linked document. HTTP is the protocol used to support the information transfer.

[00010] Typically, when someone decides to make a purchase over the Internet, the web site of the vendor submits to the user an HTML document that asks for the user to submit such things as name, address, telephone number, and credit card information; and that includes blanks into which the user may type this information. In the case of users making purchases using telephones or hand held personal assistants through a wireless gateway, similar forms are used but follow the Wireless Mark-up Language (WML) document mark-up file format (or alternative mark-up languages for handhelds/wireless such as cHTML or HDML). These forms take time for the user to fill out, and they are frequently rejected due to errors in typing. In particular, the WML forms, which must be completed by typing or writing into a very small window on a telephone or personal digital assistant (PDA), can be quite difficult for a user to fill in.

[00011] A number of attempts have been made to speed up this process. Microsoft has worked with a number of vendors to develop a wallet system that is now part of its Windows 98 operating system when used in conjunction with Microsoft's web browser. The Microsoft Passport system allows users to store personal information on a central server that can then be used at a limited number of pre-selected merchant sites on the internet. The main disadvantage of Passport is that it does not provide any services to the customer when they access a merchant site that is not linked to the passport system, so the user is severely limited in the number of places they can use the service. This is especially true for users outside the US.

00078563-101601